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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,026	01/24/2002	Chung-Chu Chen	IT0087-US	2073

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EXAMINER

TRAN, LY T

ART UNIT PAPER NUMBER

2853

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/057,026

Applicant(s)

CHEN ET AL.

Examiner

Ly T. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE filed 2/17/05.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 2/17/05 has been entered.

Claim Rejections - 35 USC § 103

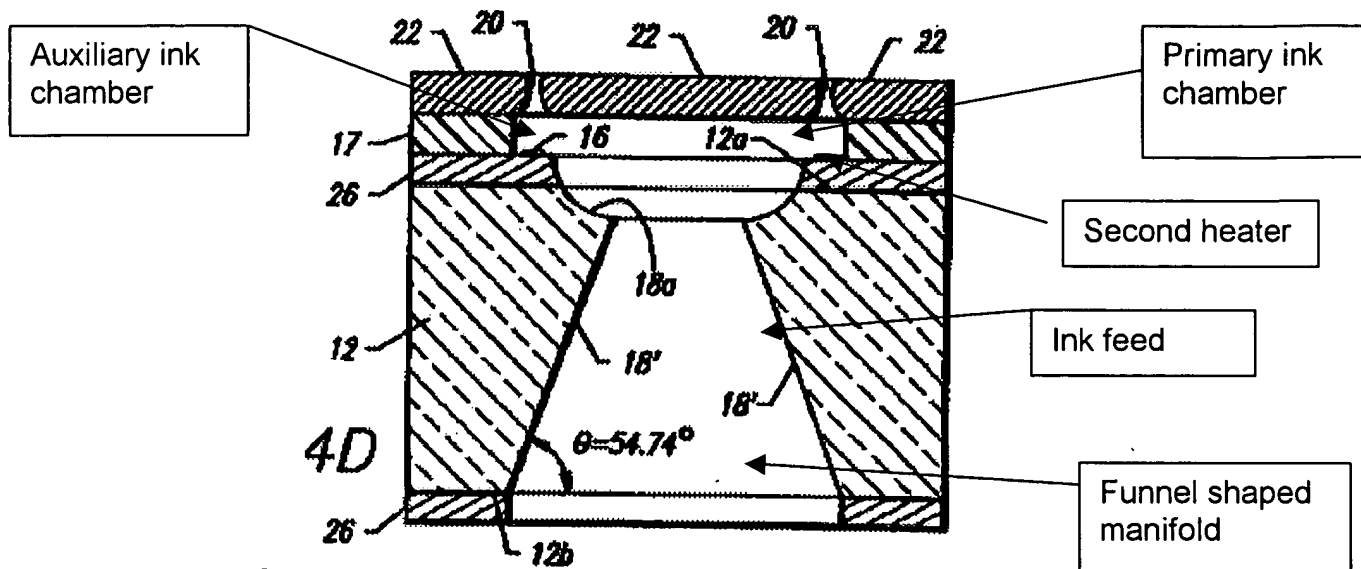
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11,12,14-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baughman et al. (USPN 5,387,314) in view of Leban (EP 317 171), Mitani et al (USPN 5,831,648), Taub et al. (USPN 5,308,442) and Hawkins et al. (USPN 6,214,245).

Baughman teaches in figure 4D a monolithic ink jet print head having off-shooter heaters and a rapid ink refill mechanism comprising:

- a silicon substrate (12) having a top surface (12a) and a bottom surface (12b);
- an insulting material layer (26) on the top surface (12a);
- a funnel-shaped manifold (18) formed in the silicon substrate (12) with a narrower end of the manifold oriented toward the top surface (12a);
- two spaced apart heaters (16, one on each side) are formed on the top surface of the substrate, a first heater being disposed on a first side of the manifold and second heater being disposed on a second side of the manifold;
- interconnects are in communication with one of the resistors (column 5: line 38-39);
- a primary ink chamber being disposed substantially co-extensively with the first side of the manifold and the auxiliary ink chamber disposed substantially co-extensively with the second side of the manifold and ink flow path/ink feed (See fig.4D).



However, Baughman fails to teach another insulating layer on top of heater and insulating material layer, an insulating layer of at least 1000A thick, photoresist layer of at least 200A thick on top of another insulating layer, metal seed layer on the first photoresist layer, orifice formed in the metal layer, Ni layer on top of metal seed layer with an aperture formed therein in fluid communication with ink jet orifice, the heater in the primary ink chamber being ring-shaped and the seed layer being either Ni or CR.

Leban teaches in figure 5: another insulating layer (46) on top of heater and insulating material layer, photoresist layer (48) of at least 200A thick on top of another insulating layer, a nickel orifice plate (56) in provided on the barrier layer which is photosesist layer (48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have insulating layer to insulate the underlying heater resistor and the conductive trace from ink corrosion and cavitation wear (Page 2: line 52-53)

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Mitani et al. teaches (Fig. 31) an ink jet print head comprising a silicon substrate (301) and a silicon dioxide insulation layer (317) formed between the substrate and a heater (303). The insulation layer is about 1 to 2 microns thick (10,000 to 20,000 Å) and insulates the substrate from heat generated by the heater (col. 24:21-25).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Baughman with a silicon dioxide insulating layer having a thickness of at least 1000 Å for the purpose of insulating the substrate from the heat generated by the heater, as taught by Mitani et al.

Hawkins et al. teaches a method of forming an orifice plate for an ink jet print head wherein a Ni or Cr seed layer (444) is formed over a substrate and then a plate layer of nickel (446) is deposited over the seed layer, so that the seed layer and the plate layer form a nozzle plate (445) (col. 8:52-65). The use of the seed layer allows for the production of very small or critically dimensioned nozzle plates which are thin and flexible (col. 8:27-30).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Baughman with a metal seed layer on the first photoresistive layer, a nickel layer on top of the metal seed layer, for the purpose of making a nozzle plate that is very small or critically dimensioned and which is thin and flexible, as taught by Hawkins et al.

3. Claim 13, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Baughman (USPN 5,387,314) in view of Leban (EP 317 171) , Mitani et al. (5,831, 648), Taub et al. (5,308,442) and Hawkins et al. (6,214,245), as applied to claims 11, 12, 14-17 and 20 above, and further in view of Moon et al. (US 2002/0012027).

Baughman as modified, teaches the claimed invention with the exception of a ring-shaped heater positioned in the primary ink chamber.

Moon et al. teaches (Fig. 5) an inkjet print head having a ring shaped heater (50') that is centered under nozzle (102a). The use of a ring-shaped heater simplifies manufacturing, prevents satellite droplets and prevents cross-talk with adjacent nozzles (p. 2:0037).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Baughman with a ring-shaped heater in the primary chamber, for the purposes of simplifying manufacturing, preventing satellite droplets and preventing cross-talk with adjacent nozzles, as taught by Moon et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ly T. TRAN whose telephone number is 571-272-2155. The examiner can normally be reached on M-F (7:30am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT

May 26, 2005



Stephen D. Meier
Primary Examiner